~~EOLIC MARINE~~ **ELECTRICAL GENERATOR** APPARATUS DRIVEN BY WIND OR WATER

~~GEEM~~

1. ~~- TITLE OF THE INVENTION~~:

The invention for which I am requesting a patent is designated : EOLIC MARINE ELECTRICAL GENERATOR, abbreviated to "GEEM".

2. - FIELD OF THE INVENTION:

The invention ~~belongs to the "Energy" or~~ relates to electrical energy generation ~~sector, because the fundamental objective of the invention, is to generate electrical energy, taking advantage of~~ from wind ~~force, the flow of river waters, or marine currents and the waves of the sea.~~ or water

3. ~~- STATE OF THE ART~~ BACKGROUND AND PRIOR ART

The present state of the art ~~in the field of Eolic Electrical Generation at the time of requesting the patent, is by~~ involves converting mechanical energy into electrical energy, using rotors with wind driven propeller-like blades or fans and ~~in the marine and river sector~~ by the use of water turbines, ~~with universities such as~~ at the National Engineering University and the Catholic University of Perú, have sponsored recent courses on ~~eolic~~ wind and ~~river~~ marine generator construction, and it is ~~also~~ known that a series of large towers have been constructed in the USA, based on that technology, to generate electrical energy by the same system .

The latest in the world is a tower constructed in Germany, 100 m. high, with a single propeller blade 50 m in diameter, having very high generating capacity and very expensive, the construction details of which are not known ~~for reasons of patent~~.

In the hydraulic sector, references can be found a century ago, to Herón of Alexandria, who invented a steam engine, following Leonardo Da Vinci and many others seeking to take advantage of the resources of the live force of water for power. The requirements of the industrial revolution for more energy, enabled Claude Bourdín in 1824, to create the first hydraulic turbine, consisting of a machine providing a mechanism rotating at great speed, turned by the force of water beating against its blades or vanes.

Shortly afterwards, the Englishman, James B. Francis, created the centripetal turbine, giving a greater power yield and being the most widely used in our time, to which were added, the Pelton wheel type turbine with very concave vanes and all the developments made to these systems, which do however, require monumental costs for construction of suitable dams.

In the marine sector, the use of turbines combined with dams are known, to take advantage of the force of tides, dams able to control the flow and reflux of water and the use of reversible transmission turbines, that could convert both the ingress and discharge of water with the same efficiency. Various small domestic models have been developed in recent years, in Peru.

None of the aforementioned cases uses an oscillatory self-regulating blade, which, if it existed, from evidence of its high electricity generating capacity and low initial cost, would be the object of spectacular industrial development.

Precedents for the direct use of the force of the wind , can be found in its use on sailing ships, which were first impelled by this means over five thousand five hundred years ago, continuing until Leonardo da Vinci; who was hoping to create flying machines, using the force of the wind, a technology that was being evolved after ~~the~~ sailing ships which ~~released~~ eliminated ~~men from his chains and~~ the use of oars.

The sailing ship, made it possible for wind to drive heavy vessels, enabling Europeans to discover new continents and colonize large parts of the planet. This state of the art remained frozen at this time in history, because nothing more than mechanical energy was required. When electricity was invented, thoughts turned to producing it and techniques were developed to generate electrical energy by other means, but the correct response to the challenge of the wind was not found by using it to turn large panels to obtain effective rotary movement. The discovery of new physical and technical resources such as the power of steam and then the internal combustion engine, nuclear energy and other inventions, relegated ~~eolic~~ wind and marine energy, which could provide a powerful impulse to the electrical development of humanity, to second place.

However, man has used wind with success, from time immemorial to build large windmills, which were the optimum in technique of generating mechanical energy in their time, illustrated in literature, by the combat of the immortal Don Quixote against the black magic personified by the wind windmills, which still exist in the fields of Europe until today.

If the same way, mills with heavy stone discs are still in use in some towns in Peru, driven by a small flow of water and used to pulverize corn or wheat grains.

Man at this very moment should be building various appliances to find a good response to a problem outlined many centuries ago and this proposal of a "GEEM", might be final response to recover for humanity, so much energy from the wind , river and sea waters

4. ~~- DESCRIPTIVE REPORT -~~ SUMMARY OF THE INVENTION

The invention ~~designated "EOLIC MARINE ELECTRICAL GENERATOR" abbreviated to "GEEM"~~, consists of a machine which captures natural aquatic or ~~eolic~~ wind energy, being clean, renewable, inexhaustible and non contaminating, transforming it into mechanical energy, and then, electrical energy, by means of conventional transformers or dynamos ~~existing in the world market~~.

The "~~GEEM~~", ~~is an~~ invention ~~of variable size and form according to its cost and electrical generating capacity. It~~ is characterize by presenting a large surface for ~~impounding~~ impact by natural energy, wind and water, in a way different from existing systems of vanes or turbine.

The system consists of a fixed static structure, metallic or of reinforced concrete, containing or serving to support a rotary structure, formed by joining four or more flat panels, having a split surface divided into sections, which can be programmed to open or close between stops, welded to a rotary shaft ~~in a dihedral angle or in radial form~~ .

The rotary shaft installed in the center of the fixed structure, will turn in one direction only regardless of the direction of the ~~impulsing~~ impulse force of water or wind, and will produce constant rotary movement, that will ~~have~~ be converted into electrical energy through existing conventional generators.

The essence of the invention, is based on the variable, split sections of the panel surface, which, initially are closed, presenting a flat surface totally facing the natural energy source, ~~impounding its~~ of impulsive force. Second, they open allowing the energy medium to flow past at the moment the panel turns against the direction of the natural energy source, by means of oscillating, flat, rectangular vanes in the form of a "Z", which turn on a lateral shaft, installed one after the other, until covering the whole area of the panel. Vanes with oscillatory movement, controlled by stops which limit their rotation to a maximum of 90°, and are regulated or aligned by adjusting bars or cables, operating in the following way:

The vanes, overlapped and aligned, by means of an initial alignment stop, parallel to the axis of the panel frame; will present a totally closed panel with a continuous surface as if it were not split. If this position is considered as the initial or closed movement, the panel will be facing the water or wind direction, with a large contact or resistance area, thus changing the direction of the water or wind vector, because with a minimum of four panels in the system, there will always be one in the closed position, or facing the direction of the wind or water

vector, ~~impounding~~ absorbing its energy without any need of adapting itself to the direction of the natural element as is the case of models with existing vanes or turbines.

In the following quarter revolution, the same panel that was facing the water or wind force in the closed position, will be aligned with its direction, with the vanes aligned with the axis of the panel, permitting the free passage of the natural force without offering any resistance.

In the third quarter revolution, the vanes will turn to ninety degrees to the axis of the panel by the effect of a final turning stop and will be located in a position perpendicular to the axis of the panel frame, aligned with the direction of movement of the water or wind, presenting as a total area of resistance, only the sum of the thicknesses of their two faces, designed as elements to resist flexion of the vane.

In the last quarter revolution, by the effect of the final oscillation stop, the vanes will be maintained in the open or position perpendicular to the axis of the panel, giving as a maximum turning resistance of the panel, only the width of one vane, with the vanes ready to move to the initial zero position, closing the whole surface area of the panel and being turned successively on a rotary impulse, as with the pistons of an internal combustion engine, to generate a unidirectional rotary movement, firm and independent of the direction of the water or wind.

The oscillatory movement of the vanes will be controlled or aligned by steel or nylon cables, or of other material, which, installed at the end of the vanes will synchronize their movements, avoiding any ~~the~~ lag in the initial oscillatory movement because of worn bearings or other factors.

In synthesis, the function of the oscillating vanes, is to create a resistant, light, variable panel, with the capacity to oppose the firm resistance of the force of water or wind. To

impound its great energy, generate rotary unidirectiónal movement, and then to be aligned with the vector, opening like a colander or venetian blind, to allow the water or wind to pass and eliminate return resistance, obtaining a gain of power over resistance, achieving the objective of creating an Eolic Marine Electrical Generator, which is efficient, clean, ecological and permanent, with the complement of speed change gear boxes and existing generators or dynamos on the market, including accumulators and transformers to maintain a uniform flow of electrical energy, in power houses or generation rooms making use of the invention.

DIFFERENCES BETWEEN ~~EOLIC~~ WIND AND MARINE MODELS

FORM AND POSITION

In the ~~eolic~~ wind model, the ~~position of the "GEEM" will be with the~~ rotary shaft, is installed in a vertical position, ~~as can be seen in the vertical elevation of a domestic model in figure~~ GEEM-2 or the vertical elevation of an industrial model having three panels, one above the ~~other, in GEEM-3, with a large impounding or impulse surface, where the~~ The fixed structure ~~consisting~~ consists of external columns, which may be of steel or concrete, ~~can be seen~~.. The structure ~~serving~~ serves as support for the bearings of the rotary shaft, ~~in industrial models, may be gigantic in the size of the panel frames or arms and in height.~~

In the marine model, ~~the form and position of the "GEEM", is defined by the horizontal position of~~ the rotary shaft is horizontal and the ~~vanes, with a~~ fixed structure supporting the vanes has ~~of~~ two forms :

The support structure is floating and has

One.- ~~One submerged in another floating structure, or anchored floats, which will have~~ two vertical rails for sliding the fixed structure, ~~included~~ including the rotary shaft bearings, into position.

The fixed structure is submerged and

Two.- ~~Submerged,~~ anchored to the bed, ~~with~~ by steel columns or reinforced concrete plates, ~~in rivers or on beaches, that likewise~~ sea, contain rails to submerge the fixed structure of this model, ~~according to plan : Floating Marine Generator GEEM-4, and Fixed Marine Generator GEEM-5.~~ and also

The fixed structure, in ~~the~~ small or large ~~eolic~~ wind models, by reasons of space in the support area, can be of radial form, with two columns at ninety degrees or less, that could cover a quarter circle or less, requiring ~~the "GEEM", with~~ a double horizontal structure of trusses, which, starting from the columns meet at the center, where they serve as support for the rotary shaft, being able to ~~keep~~ maintain stable equilibrium and resist wind forces or shock waves due to seismic tremors ~~if such exist in the area.~~

In ~~the~~ large industrial multiple models, fixed structures will be built, with diametrical girders or at hundred eighty degrees, containing at the central point, the rotary shaft bearings.

A third ~~eolic~~ wind model with fixed structure consists of a fixed vertical shaft over the generating room, on which the rotary shaft supported by bearings external to the fixed shaft, will turn, having trusses or turnbuckles external to the fixed shaft, that ensure the stability of the whole of the fixed shaft system .

In the ~~same plans, the machine or~~ generating rooms, ~~can be seen, where~~ are the gearing, the rotary shaft ~~with increase~~ and speed gear box and the dynamo or conventional generator, ~~are located, to which will be added,~~ accumulators and electrical current control equipment, maintenance stores for the system and spare parts ~~according to the design of each specific installation, as required by the construction practice~~.

In the domestic or industrial models, the ~~panels~~ panel frames will be light and resistant sreel or aluminum pipes, or other existing or materials designed especially for its function and necessary aerodynamic form. The vanes will be of light plates, plastic, reinforced glass fiber, stainless steel or other flat laminated material, doubled, with a structure and ends determined by practice and trials, in order give minimum flexion from the impact of the wind in cases of storms or strong winds.

The shafts or spindles of the panels will be designed, taking into account the risk of flexion, and so they will not jump out of position and be lost, They will be installed with removable bearing housings screwed or bolted to the panel frame in order to facilitate their change or maintenance. The bearings must be thoroughly protected against corrosion, with protectors or removable caps having seals or retainers incorporated into the bearing housings. The stops shall have shock absorbers made of rubber, polyurethane or other suitable material to avoid breaking the vanes by impacting each other.

~~NAMES, PARTS AND PROCEDURES FOR THE INVENTION~~

are listed hereafter.

~~For reasons of order,~~ The parts or components of the invention, ~~have been organized with the following names for each of the parts and procedures, in order to request due intellectual property protection, which will serve as a basis for the claims which are as follows:~~

~~GEEM - 0001~~ .- FIXED STRUCTURE : Static structure, anchored to ground or floating, of steel or concrete, of variable form and size, ~~being the element on which the~~ whole "GEEM" system is built, ~~and~~ which serves as the support to the rotary structure, containing the rotary shaft bearings and the rails in the hydraulic or marine model..

~~GEEM - 0002~~. - ROTARY STRUCTURE: This is the set of elements, which, by rotary or circular motion, generates mechanical energy, consisting of a central cylindrical shaft, that rotates in bearings installed in the center of the fixed structure, receiving the impulse from the water or wind through the frames of self-regulating panels, at the same time receiving the impulse from the oscillatory vanes. The rotary structure in the ~~eolic~~ wind model will have the shaft, panels and vanes in the vertical position, and horizontal in the hydraulic and marine model.

~~GEEM - 0003~~ . - UNIDIRECTIONAL ROTARY MOVEMENT: Independent of the direction of the water or wind vector, programmable in its sense or direction at will, by the arrangement of the vanes in relation to the shaft of the panel frames, the position of which determines a circular movement towards the right or left of the rotary shaft and which is programmed in the following way:

For the vanes turning clockwise, the initial moment of rotation will be with the left panel, aligned or closed, with the vanes turning on their shafts to the right side and overlapping the following one with its left side, at the same time that the panel on the right side has the vanes aligned with the water or wind direction, and opened or perpendiculars to the shaft of the panel on the right side.

For the panels turning ~~anti-~~counter-clockwise, the right side panel will be, receiving the impulse from the water or wind towards the left, turning the vanes with the shafts towards the left side and overlapping the following one with its right side or edge, at the same time that the left side panel has the vanes opened or aligned with the water or wind direction, a position which determines that the rotary shaft makes a unidirectional movement independent of the direction of the water or wind, which for patenting purposes is called a procedure.

~~GEEM - 0004~~. - ROTARY SHAFT: Consists of a cylindrical steel pipe or other material, divided into four or more equal parts, with bearings at each end,, installed at the center of the system, to which the panel frames will be bolted or welded, also containing the brake for stopping the system for maintenance or installation and coupled by pinions or a pulley system to the transmission system to the speed change gearbox.

~~GEEM - 0005~~. - PANEL FRAMEWORK : Consists of two rectangular or aerodynamic pipes for each panel, that will be welded or bolted to the rotary shaft, at 90° and in radial form to the other panel frame, the distance between them being determined by the length or size of the vanes, parallel between pairs or panels, containing vane spindles, spindle bearings and the self-regulating stops, the parallel distance being maintained by perpendicular pipes and diagonal ties or turn buckles on the side opposite to the area of oscillation of the vanes.

~~GEEM - 0006~~ . – SELF- REGULATING PANELS : Flat surface element, of rectangular or square form , contained in the panel framework, with a turning motion, divided into rectangular parts oscillating lengthwise, with a surface which when closed, converts it into a closed panel ~~impounding~~ absorbing the force of water or wind and when it is open to return or pass against that same natural force, generating a continuous rotary movement, and converting the force of water or wind into mechanical energy and this, into electrical energy.

~~GEEM - 0007~~ . - OSCILLATORY VANES: Component dividing the panel into rectangular elements, laminated and flat, with double skinned sides and ends with a structural function, manufactured in two forms: First, with projecting cylindrical shafts from one side to the two ends.

Second, with moldings or semi- cylindrical relief at both ends for the bearing mounting shaft, or oscillating spindle. The vanes will be manufactured with light laminated steel, plastic or reinforced fiber glass plates, with protective finishes against environmental corrosion. Includes molded adjustment covers installed with bolts or rivets, for pipes or spindles for mounting bearings.

~~GEEM - 0008~~. - OSCILLATORY VANE MOVEMENTS : Procedure characterized by the automatic self-regulation of the vanes in relation to the direction of movement of the water or wind and the panel framework. The vane, the movement of which during a 360 ° rotation of the panel, is the essence of the present invention, and will have the following steps:

Taking as a first step or initial position of the panel for a turn of 360°, a position completely against the direction of the water or wind, the vanes ~~palettes~~ will be aligned one behind the other to the shaft of the panel framework, whether to the left or right of the rotary shaft, overlapping or closing the whole panel. In this position, said panel will receive the maximum impulse from the water or wind, an impulse that will be transmitted to the rotary shaft through the panel framework.

At the start of the following quarter turn, the vanes continue to be aligned with the shaft of the panel framework, with the water and wind direction, offering as total resistance, the thickness of the double structure of a single vane or the minimum of the whole turn.

In the following 90° of rotation, with the frameworks at 180°, the vanes that ~~they~~ were aligned with the water or wind direction and the panel framework, will open, turning 90° on its eccentric shaft, allowing the water or wind to pass freely, each vane offering in resistance, only its structural thickness and together the sum of the vane thicknesses.

Toward 270°, the vanes prevented from turning through more than 90° on the shaft, will present the most turning resistance, but will continue follow open or parallel to each other, allowing the water or wind to pass without difficulty. In the fourth fraction toward 360°, the vanes in a perpendicular position to the shaft of the panel, will give a total resistance equal to the width of a single vane, being ready to be turned on the shaft of the panel to be closed again, continuously generating a rotary movement that it is the object of the invention.

~~GEEM – 0009~~. – VANE SHAFTS OR SPINDLES: Consist of steel bars or other material, turned cylindrically to fit the interior of bearings or bushes, installed on one side of the palettes projecting from both ends, for the purpose of oscillating the vanes or installed in the panel frameworks, to be adjusted to the bearings or bushes installed to one side and at the ends of each vane, fitted with molded flanged plates fitted with bolts, self-tapping screws or rivets, removable for maintenance.

~~GEEM - 0010~~.- VANE OSCILLATION STOPS: Consist of stops welded or bolted to the panel framework, projecting from this to the vanes to limit the oscillatory movement of the vanes from 0° when they are aligned with the panel framework, to 90° or perpendicular to this, at the end of the oscillatory movement.

~~GEEM – 0011~~. –PROFILE REGULATOR OR VANE ALIGNER: Consists of a steel, aluminum, fiber or other material cable, installed by the external section or edge opposite the shaft from the bottom end of the vanes, on some fixed revolving supports to the lower part of the vanes, with a union rod to the regulator cable in the form of a shaft or a washer; one of the vanes of each panel, keeping them in the same oscillating position, closed or open, at 0° to

the vanes aligned with panel framework and at 90° from this as the maximum limit of oscillation, avoiding defects, disagreements or mis-timing between the vanes.

~~GEEM - 0012~~. - TRANSMISION OF ROTARY MOVEMENT: Consists of a set of pinions, that transmits the circular movement of the rotary shaft directly to the eolic generators or through a cylindrical shaft that is coupled at 90° with the submerged rotary shaft rising to the surface to the speed change gearbox, in the case of river or marine models.

~~GEEM - 0013~~. - BRAKE FOR THE ~~EOLIC~~ WIND ROTARY SHAFT AND THE MARINE TRANSMISION SYSTEM: Consists of a mechanical or hydraulic brake applied to the rotary shaft and the pulleys or pinions in the eolic model, and to the transmission surface shafts in the river or marine models, in order to immobilize the system for maintenance

~~GEEM - 0014~~ . – SUPPORTING PIPE FOR VANE BEARINGS: Consists of a cylindrical pipe machined internally to fit the bearing for the oscillatory vane spindle, in the event of it being fitted in the vane and which will be installed in the molded lower and upper sections of each vane and fitted with bolted or riveted covers.

~~GEEM - 0015~~ . – SUPPORT PLATE FOR VANE BEARING : Consists of a rectangular plate machined to fit a vane shaft bearing in its center, in the event of the bearing being installed in the panel framework, with countersunk holes for installation, and rectangular plate with a groove to the center, equal to the diameter of the vane spindle, fitted with bolted to the panel framework, in the event of the vane being installed to one side of the panel framework .

~~GEEM - 0016~~ . – FIXED RADIAL ~~EOLIC~~ WIND DRIVEN STRUCTURE: Consists of two or more columns installed in the external circular area of the system, that support radials trusses that

are joined at the central point of the "GEEM" supporting at its center the lower and upper rotary shaft bearings, and located over the generation room and occupy spaces of less than 180° of the circle of rotation of the system as points of support.

~~GEEM – 0017~~ . - DIAMETRICAL ~~EOLIC~~ WIND FIXED STRUCTURE : Consists of three or more columns installed outside the circular area of the ~~"GEEM"~~ wind driven generator and which supports a 180° truss and another perpendicular at 90° that supports at its central point the rotary shaft bearings, defining the electrical generation room, and requires a minimum supporting space of 180° of the circular perimeter of the ~~"GEEM"~~ wind driven generator .

~~GEEM – 0018.~~ – FIXED ~~EOLIC~~ WIND DRIVEN STRUCTURE WITH STATIC SHAFT: Consists of a fixed structure with a vertical static column or cylindrical shaft, installed at the center of the "GEEM" over the electrical generation room, around which will be installed the tubular rotary shaft, or divided into four or more sections corresponding to each panel, fitted with flanges. On the fixed shaft the upper and lower rotary shaft bearings will be installed, and which at the same time will be fitted with corresponding sectional tracks for each panel. The fixed or static shaft, when necessary, will be immobilized from its highest part, with tensile steel cables, from columns installed in the perimeter of the "GEEM", lessening the cost of the structure and obtaining greater length panels that in the others models or forms.

~~GEEM – 0019~~ . – FIXED MARINE ~~OR RIVER~~ STRUCTURE: Consists of a removable structure in the form of an inverted U, with a horizontal section on the platform or surface and two verticals rails at its ends, which submerged, will serve to support the rotary shaft bearings; the panels and the vanes. The fixed marine or river structure will be slid for

installation or removal, by some additional rails fixed to the concrete blocks or steel on land or to submerged columns in floating units.

~~GEEM-0020.~~- MARINE ~~OR RIVER~~ ROTARY STRUCTURE: Consists of a metal bar or cylinder installed on the removable fixed structure, revolving on submerged bearings and containing the panel framework, the oscillatory vanes, impounds and converts the water energy into rotary movement that is transferred to the transmission shaft through pinions. The system must be manufactured with stainless material of high resistance to the force of waves and marine currents.

MARINE

~~GEEM - 002~~1. - SUPER FIXED/STRUCTURE, ~~RIVER OR MARIN~~E: Consists of an additional structure to the removable fixed structure, that serves as support to the removable fixed structure and it must of be built with great inflexibility and stability, with anchor plates fixed to the bank of rivers, or the sea bed, in the beach coastline, or where they may be marine currents or as inverted columns in floating structures, with material that may be concrete blocks or column or steel plates, that contain the rails by which the columns of the removable fixed structure are slid into position.

~~GEEM - 0022~~. – DIVIDED ROTARY SHAFT : Consists of four or more equal metal sections with seats for the rotary shaft bearings at the upper and lower ends, corresponding to each panel, and joined by flanges integral with them to form a rotary shaft to be installed on the fixed static shaft ~~of the "GEEM" 0018~~, a divided shaft that will support the panel frameworks and at the same time will serve also as support for the lower pulley or pinion that will transfer the rotary movement to the speed change gearbox, and will serve as support to the brake for the rotary structure, for installation and maintenance.

WIND DRIVEN

~~GEEM - 0023~~ . - MULTIPLE ~~EOLIC~~ GENERATOR: Consists of a set of panels superimposed vertically over each other, in order to increase the impounding or impulse area, thus having more panels on the same rotary shaft, with an increase of rotary shaft bearings and increased length of the arm of the panel levers, with reinforced panel frameworks in the form of trusses until the limit of material stress, obtaining huge panels with maximum impounding capacity area of eolic power, for which radial balance turnbuckles will be used between panels and diagonal ties against vertical flexion, also subdividing the frameworks into sections or structural nodes with correspondents tensile cables for the opposite side of the oscillation area of the vanes.

~~GEEM - 0024~~ . - ADDITIONAL ELECTRICAL BOOSTER: Consists of a vertical rotating cylinder, activated by an electric motor installed at a fixed point external to the circle, generate by the Eolic GEEM, the external rotating surface area of the cylinder being exactly equal to the circle generated by the end of the lower section of the panel framework and by being turned and rubbing tangentially against a curved plate at the end of the panel; will give it an impulse, additional to the force of the wind, by being turned in the opposite direction to the rotary movement of the "GEEM", to increase the efficiency of the system . The speed of the rotary cylinder booster will be inversely proportional to the speed of the wind and it will be regulated by an electronic logical controller. The cylinder will be installed in a static fixed point of the ~~"GEEM"~~ wind driven generator working at ground level in high altitude zones such as mountain summits and on trusses projecting beyond the elevation tower in the event of generators built at ground level.

~~GEEM - 0025~~ . - IMPULSE PLATE : Consists of a vertical plate the curve of which is exactly equal to the circle generated by the panel frames of an Eolic GEEM, and being a part of this, is installed in vertical plane with the convex section towards the outside, to receive an additional impulse tangentially, from the rotary cylinder, to the force of the wind, accelerating it and increasing efficiency.

The plate, because of expansion effects of the panel framework will be mounted on springs fixed to the plate on a mobile shaft, which will absorb the expansion, being separated from the end of the panel framework, by a distance equal to the calculated expansion of the panel framework and will have a slight curve of the vertical ends towards the concave section of the plate, of a dimension equal to the calculated expansion of the panel framework, thus avoiding a violent shock with the rotary cylinder.

~~GEEM - 0026~~. - ~~EOLIC~~ WIND AND MARINE COMPOUND GENERATOR : Consists of two or more ~~eolic~~ wind or marine generators installed side by side to add their rotary movement together to a single conventional electrical generator in the following way:

The ~~eolic~~ wind compound generator, by the installation of two or more generators, with their rotary shafts connected at ninety degrees by means of pinions to a horizontal rotary shaft, transmitting this rotary movement to a differential gear which duplicates or triplicates the total power fed to the electric generator, thus enabling the use of high capacity electric generators.

In the marine compound generator, by the construction of two or more generators, with vertical transmission shafts, delivers the partial power to a common horizontal rotary shaft by means of pulleys or pinions for it to be coupled directly to the conventional generator, thus obtaining sufficient power to drive a high capacity electrical generator.

FIGURES OF THE DRAWING

5.-BRIEF DESCRIPTION OF THE ~~DRAWINGS AND FIGURES.~~

see yellow sheets

6. DETAILE DESCRIPTION OF THE DRAWING

~~FIGURE 1. – SECTION OF EOLIC GENERATOR PLANT.~~ ~~The plan is a horizontal court~~ Replace with insert (A)

of the eolic system, in which 3 squared columns at 90° and 180° of a hypothetical shaft of the system to be installed, are identified by cross-hatching, as well as the supporting trusses and the upper and lower supports for the rotary shaft, illustrated in the center as a circle and a point, four panel frameworks at 90° each, on the axis of which the spindles or shafts of five vanes are located, in the position they adopt in each frame work relative to the wind direction, which is indicated by arrows.

The position adopted by the vanes in each quarter turn of a 360° revolution is clearly shown as well as the intermediate positions with a section of the frames. So, in the left frame, the vanes are seen to be closed, receiving the total impulse of the wind, which we will call position zero or initial. (circle 1).

In the second quarter at 90° turning clockwise, (circle 2) the vanes are aligned with the wind ~~without causing any resistance to it~~.

~~Towards 180°, while the panel frame turns, the vanes are always aligned with the~~ wind ~~tat 90°, or perpendicular to the panel frame, at which time the wind passes by freely~~.

After turning 270° to position ③ the vanes 6 are perpendicular to the frame 5

~~Towards 270° the panel frame is at 90° to the initial point with the perpendicular vanes~~, offering a resistance equal only to the width of one vane. Towards 360° or the initial point, the vanes will offer a little more resistance but are ready to be ~~pushed to the axis~~ moved into the plane of the panel frame, to repeat the circular movement generated indefinitely.

Insert (B) Replace ~~WEND~~

~~FIGURE 2. – ELEVATION OF DOMESTIC EOLIC GENERATOR~~ :

~~With two cross-hatched columns or beams defining :~~

INSERT A

DETAILED DESCRIPTION OF THE DRAWING

The wind driven generator plant in Fig. 1 comprises a rotary assembly 1 of four panels 2 spaced at equal angles of 90°. The rotary assembly rotates around a central rotary shaft 3 by impact of the wind against the panels. The rotary assembly is supported by a fixed structure diagrammatically illustrated by columns or trusses 4. Each panel 2 comprises an open frame 5 on which a number of vanes 6 (four vanes are shown in Fig. 1) are rotatably supported. The vanes 6 assume different angular positions in their respective panels as the assembly 1 rotates as shown at the four angular positions A, B, C, D. At position A the vanes are closed and lie in the plane of the frame 5 to face the direction of the wind, shown by the arrows to receive impulsive force from the wind to turn the assembly 1 clockwise. After turning 90° to position B, the vanes 6 remain closed and offer no resistance to the wind. After the next quarter turn to the 180° position C, the vanes 6 are opened and aligned with the wind direction to permit the wind to flow freely through the open panel with substantially no resistance.

INSERT B

Fig. 2 shows a fixed structure 10 defining an upper space 11 containing rotary assembly 1 and a lower space 12 contains an electric generator room 13. The central rotary shaft 3 is rotatably supported by upper bearing 14 and lower bearing 15. The lower end of the shaft 3 is connected by a transmission 16 to an electrical generator 17. A brake 18 is disposed at the lower end of the rotary shaft.

~~1. The fixed structure, which creates two spaces : In the lower section the electric~~ generation room, in the upper section, the space for the rotary structure, ~~with~~ the lower and upper rotary shaft bearings.

2. The rotary structure, ~~illustrated by~~ parallel lines, to the center, the rotary shaft in vertical form ~~with the pinions~~ driving the shaft to the speed change gearbox and conventional ~~generator and~~ In the upper ~~section~~ space 11, the ~~panel~~ frames, 5 are welded or joined to the rotary shaft. 3

~~3~~. In the upper ~~section to~~ space 11 at the left, a panel with four closed vanes is seen 4 and to the right of the rotary shaft, 6 four ~~sectioned~~ opened vanes are, ~~in the lower section of the panels the oscillation stops and the aligning cable shown as a dotted line.~~ Replace with insert (J)

FIGURE 3 . – ELEVATION OF MULTIPLE EOLIC GENERATOR : Plan illustrating the fixed structure of diametrical type, with two external columns, a pitched truss at the top with the rotary shaft upper bearing in the center to the center, a girder with two interior columns in the lower section, defining the space for the installation of the panels.

~~To the center of~~ In the upper ~~part~~ space 11 of the fixed structure, ~~there~~ in Fig 3 are six 2 panels, each having fifteen 15 vanes, 6 one above the other, in three tiers, having a common rotary shaft 3 and a single fixed structure. Panels 2 are in the closed position on the left side and the vanes 6 are open on the right side, ~~a sectional view~~ allowing the wind to pass freely, therethrough

In the lower ~~section, a generation~~ space 12 is the generator 13 room, ~~over which is the lower rotary shaft~~ as in Fig 2 bearing, ~~the rotary shaft brake, the pinions driving the rotary shaft to the speed change gearbox, the generator and accumulators.~~

INSERT J

At the upper and lower edges of a panel 4 are oscillation stops 19 and at the lower edge of the panel is an aligning cable 20. The oscillation stops 19 serve to block rotation of the vanes past the 0° position when the vanes 6 are in the plane of the frame 5. The oscillation stops 19 are welded or bolted to the frame 5 and project into the rotation path of each vane to limit oscillation thereof from 0° when aligned in the plane of the frame 5 to a maximum of 90° in its perpendicular open position at the end of its oscillating movement. The aligning cable 20 is connected to the vanes 4 as will be explained in detail later to maintain the vanes 6 in a uniform oscillating position closing or opening them simultaneously and limiting oscillation of the vanes to the 90° open position.

Figure 4 shows a floating marine generator having 21

~~FIGURE 4. - FLOATING MARINE GENERATOR: With~~ a float platform, on which ~~it is noted~~ there is a conventional generator, 22 with a speed change gearbox that receives the rotary movement, 23 and contains a transmission shaft 24 connected to 12 of rotary assembly 1 a column that goes down into the water, ~~interrupted by a~~ panel ~~frame with the vanes closed, that goes down to the center of the rotary shaft, from which the other panel frames radiate, the one which leave in the position adopted for each quarter turn of a 360° revolution.~~

The direction of the water flow is shown by arrows and produces clockwise rotary assembly ~~A circle of arrows that indicates the~~ revolving movement of the ~~panels and to the outside of the left side, arrows indicating the direction of water flow, which, in the upper panel and to the axis of the shaft of the column in the closed position, impels the panel clockwise; the various positions of the vanes where they are aligned with the water, and where they do not allow water to pass.~~ by impact with the panel with closed vanes causing rotation of central shaft 3 to drive column 23 24 To the left is the anchor of the floating ~~barge and a suggested generation room of aerodynamic design.~~ marine generator.

Fig 5 shows a fixed marine generator which is similar to Fig 4 except that ~~FIGURE 5. - FIXED MARINE GENERATOR: In this plan a section of the sea bed is shown, the columns or blocks~~ column 23 is anchored in the sea bed, A reinforcement column 26 is also provided. ~~into which the assembly and maintenance rail, the rotary shaft descends and illustrated by a circle, the rotation space for the panels at 90° to each other, containing the vanes in different positions of oscillation~~. In the ~~upper part (1) receiving the impulse from the water in a clockwise direction, the closed vanes~~, with the panels illustrated on the shaft from the concrete column, ~~which~~ we will call the zero moment or at 0°. In the following 90° (2) ~~the vanes~~ are aligned with the water, to 180° (3) receiving a double impulse ~~by~~ impounding the force from return water in the case of waves, probably ~~providing~~ additional power, or double power, duplicating the power of the ~~water, towards 270° (4) returning to the zero or initial position~~ .

In the upper part on a concrete slab or fixes platform the transmission shaft gearing with 45° bevel pinions to the speed change gearbox. The transmission shaft bearings and the conventional generator. Suggested roof for the generation room. To the right side, an additional steel or concrete column.

Below of the name of the plan is a legend explaining the virtues of the system

Figs 6A and 6B show the details of construction of one vane 4. In these Figs. the following elements are seen

~~FIGURE 6 – VANE: In the upper left part, front elevation of a vane in perspective, with the subtitle VANE BASIC CONCEPT, with numbers defining:~~

Sleeves 31 are secured at the upper and lower edges

1. ~~Rotation Shaft, on the edge~~ of the rectangular vane.
2. ~~A rectangle defining~~ the vane ~~, not to scale and without dimensions, because there is no exact proportion, only that~~ is rectangular with the length ~~shall be~~ greater than the width ~~of the surface, which gathers~~ to receive the force of the water or wind from the effect of the impulse.
3. ~~Oscillating~~ Spindle~~s~~ 32 are mounted in the sleeves 31 and project ~~with the two projecting units from the oscillation shaft one~~ at each end of the vane.
4. ~~Spindle~~ A support for 33 aligner ~~section to be inserted~~ an Cable is secured in the interior angle of the vane ~~and he~~ a bent end of bent section designed which to resist deflection.
5. The side edge 35 of the vane is bent where it receives the sleeves 31 ~~Bent section at each end of the vane~~ to prevent deflection of the vane due to the force of wind or water, ~~being further reinforced at the axis of the oscillation spindles~~, where greater resistance is required. The sleeves 31 receive bearings 35 which in turn rotatably support spindles 32.

In the upper right part a section of the vane outline with the sub–title of : SECTION OF VANE = Z SECTION where the form of the section is clearly shown, consisting of a flat platebent along each longitudinal edge to help resist deflection forces.

The Vane can also be folded out its upper and lower edges as shown at folds 36 for additional resistance. The contact surface of the vane is provided with 21 shock absorbers 37

Below the described drawing, the names and numbers of the parts are shown as follows :

1. Rotatory shaft.
2. Surface or impulse area for water or wind
3. Oscillation spindle
4. Section of aligner support
5. Bending to resist deflection

In the lower part of the perspective vciew under the sub-title: VANE WITH ACCESSORIES : The vane with details of castings for tbe bearing housings, pressure covers and accessories with numbers, to the right side, the meaning of the numbers.

1 PipeBearing housing pipe.
2. Oscillatory spindle, consisting of two two turned shafts with a small section with the same diameter as the bearing.
4. Cover of bearing housing pipes , projected in the upper part .
5. Oscillatory spindle bearing – visible inside the bearing housing pipe.
6. Support of aligner profile, revolving with buttonhole or socket-pan.
7. - Adjusting cover for aligner section.
8. –Shock absorber
9. Perpendicular bending for resistance to deflection.

FIGURE- 7- VANE WITH FIXED SPINDLE AND ACCESSORIES : In the upper part a perspective view of the vane, with fixed spindle and parts of the visible panel frame, those

containing the bearing housing blocks and accessories with a table of numbers with with the following numbers and names:

1. Vane
2. Fixed spindle
3. Bearing housing block
4. Spindle adjusting cover
5. Aligner section fixed support
6. Fixed support cover
7. Panel Framel

In the central right section to the left, a plate with a molded channel to fit the oscillation spindle, with holes to bolt it to the panel frame.

To the right side, a plate with a bearing in the center for spindle fixed to the vane with holes for bolting to the panel frame.

To the extreme right a section of the bearing housing pipe with the bearing turned down to fit thespindle for vanes with bearing housing pipes and the spindle fitted to the panel frame.

In the lower left section a pressure fixing cover for the bearing housing pipe. To the right a split section of the vane, to the left with the bearing visible and the pressure cover of the bearing housing pipe in position, to the right after the section of one vane overlapping the other with bearings, stuck to the former ashock absorber which can be of rubber, polyurethane, or other material. Underneath this a section of the vane with the bearing and the pressure fixing cap for thebearing housing pipe, with the sub title : Vane and shock absorber.

Fig. 7 shows a floating marine generator 40 (insert ©)

FIGURE - 8 - FLOATING MARINE GENERATOR: Front elevation illustrating the marine rotary shaft in horizontal position, with its respective bearings, oil casing water insulation, gearing to the change speed gearbox, with the pipe protecting the transmission shaft, to avoid the wearing and corrosive action of water, illustrated with dotted lines at the sides of the transmission shaft.

The rotary shaft in a horizontal position, and in the section above the rotation shaft, three vane in the closed position, in the lower part of the rotation shaft, three palettes in the open position.

~~Towards both sides of the rotary or vanes structure, in dotted lines, the~~ A removable fixed structure 44 in the form of an inverted "U" ~~which~~ projects over the platform passiing over ~~the~~ a conventional electrical generation ~~machines~~ system. 45 A cabin 46 encloses the system 45

Above water level a float defining the fixed superstructure, formed by the floating platform and two columns that go down into the water, containing the assembly and maintenance rails or marine fixed superstructure. On the platform, containing from left to right, the pinion gearbox, the speed change gearbox, the generator set and above it, the suggested aerodynamic design of the electrical generation room.

replace with insert ①

FIGURE 9 . - FIXED EOLIC STRUCTURES: Plan of the three models of fixed eolic structures, in the upper left part, a circle in which the radial segments coinciding at the center of the circle, illustrating the trusses that enter from the exterior columns, serving to support upper and lower bearings of the eolic GEEM.

To the right side, an elevation of the same structure in the form of russes : One vertical from the one which leaves two horizontal trusses, the lower one defining the generation room and to the system shafting, lower bearing support, and the other, in the upper part that suports

INSERT C

Fig. 7 shows a floating marine generator 40 having a platform 41 supported by floats 41 on the surface of the water. The float supports columns 43 which support rotary assembly 1 having a horizontally disposed rotary shaft 3. There are three vanes 5 in each panel, the panels being closed at the top and open at the bottom. Water current flows in the direction into the plane of the drawing.

INSERT D

Figs. 8A, 8B, 8C, 8D, and 8E, 8F show three embodiments of fixed structures for supporting the rotary assembly 1. In Figs. 8A and 8B the support structure comprises two vertical columns 50 with radially inwards horizontal trusses 51 which meet at a center and support a fixed shaft 52 carrying bearing 53 rotatably supporting the rotary shaft of the rotary assembly 1. Disposed below the rotary assembly 1 is the generator rom 13.

Figs. 8C and 8D show a modified arrangement in which a third vertical column with horizontal trusses is provided diametrically opposite one of the other columns and its trusses are combined.

Figs. 8E and 8F show the support structure with two diametrically opposite columns 50 supporting steel tension cables 54 which support the fixed shaft 52. The lower bearing 53 is supported by another tension cable on fixed posts 56.

the the rotary shaft upper bearing, with the sub-title ELEVATION RADIAL FIXED STRUCTURE.

To the left center, a circle with two parallel diametrical lines and one radial perpendicular to the first, indicating the trusses that support the rotary shaft bearings.

To the right in elevation, two columns in the form of trusses, joined at the lower part by a horizontal beam which defines the generation room. In the upper part a truss that supports two columns through the center of which passes the axis line of the system, in which is illlustrated the upper and lower rotary shaft bearings, with the sub-title of ELEVATION: DIAMETRICAL FIXED STRUCTURE.

In the lower part, an elevation of the center, a cross-hatched column of diferent diameters, defining the lower part of the generation room, with the name of the static fixed shaft, in the upper part two dotted lines that represent cables or ties, joining the central column with two suggested trusses with a vertical line and an oblique one in the form of an obelisk, that would be the columns where the equilibrium of the central column would be ensured, or in the case of units of great size or magnitude, the fixed static shaft, with the sub–title: FIXED ECOLIC STRUCTURE , WITH STATIC FIXED SHAFT.

replace with insert (E)

FIGURE 10 . - FIXED SHAFT CYLINDRICAL STATIC: Plan of elevation illustrating the center of a vertical cylinder, in the upper part, two compond panels supporting bearings running on the cylinder and there are two for each panel frame one turning on a track in the upper part and the other in the lower part in the electrical generation room. Below this is is a pinion on the cyinder mating with a small one on the rotary movement transfer shaft, leading to the speed change gearbox, and from this to the conventional electrical generator. Above the panels, there are two horizontal trusses that at the same time serve as a maintenance bridge to the pnels and vanes by means of pulleys that can advanc horizontally

INSERT E

Fig. 9 shows a wind driven generator in which three sets of superposed panels 2 are secured to central rotary shaft 3 with open frame 5. Each panel includes twenty four vanes 6. The rotary shaft 3 and the frame 5 are supported on upper and lower bearings 14 and 15 supported by a framework (not shown). A pinion 60 is fixed on the rotary shaft 3 and meshes with a smaller pinion 61 secured on a transfer shaft 62 which extends into the electric generator room 13 to drive the electric generator 17 via the transmission 16.

or vertically. In the lower section of the cylindrical pipe there is an entrance door to the inside of the cylinder , which by means of a cat ladder, gives access to the bridge for maintenance or installation of the system.

Fig 10 shows a wind driven generator

~~FIGURE 11. - ALIGNER PROFILE: Plan of the plan view of of an Eolic GEEM~~, having four panels which are seen in their different vane positions with the ends opposite ~~to~~ the ~~oscillation~~ rotary shaft/joined by ~~dotted lines~~ 3 aligning cables 62 which ~~represent a thin section that~~ join the vanes equidistantly to keep them in a uniform position, opening or closing them so their oscillating movement is synchronized.

FIGURE- 12 . - ALIGNER SECTION: In the upper section a a perspective view of a panel frame with open vanes, below which there is section of supports which project from the vane.

Fig 11B shows a rotatable support 64 having a ring or washer 65 at its

In ~~the central section to the left of a lower segment of the vane, of~~ from the vertex of ~~which, a revolving support projects, with a hole or washer at its end, fthrough~~ through which ~~two~~ aligning cable 62 extends. The rotatable support is ~~dotted lines pass, representing~~ the ~~alignment section. There is a fixing cover below which~~ is mounted in a secured at the vertex of the bend at the inner edge of the 6 the/bushing ~~in which the support turns~~.

Fig 11C shows another embodiment in which a support 66 is

~~To the right side, a similar vane segment to the former~~ indicating the fixed support and includes a lower pin 67 for rotatably engaging in a hole in a washer 68 fixed to the welded or fixed to the vane, ~~with a fixing molding~~ for a ~~thin section or cable with a washer, a~~ aligning The lower end of the pin 67 is threaded to engage a nut 69. ~~nut on the threaded section of the aligner support.~~ line 62.

Fig 11D shows spaced to the aligning

~~In the left klower section, the aligner section with~~ two stops or ~~washers~~ fixed ~~inside~~ cable 62 ~~the space delineated for the oscillating movement of the alignment section. Fixed to the vane~~ for ~~with the sub title: ALIGNER SECTION WITH REVOLVING SUPPORT~~. receiving

Fig 11E shows the 68

~~To the right side, a section in the form of a bar with a washer and eyelet incorporated,~~ the ring 65 in the aligning cable 62 to receive the pin 66 ~~through which orifice the fixed support of the aligning cable passes, welded and~~ fixed to the vane, ~~having the sub-title : ALIGNER SECTION WITH FIXED SUPPORT~~ ..

Replace with insert (G)

FIGURE 13. – DIVIDED ROTARY SHAFT ON FIXED STATIC SHAFT : Plan in which a cylindrical column of different diameter sections projects in which the first reduction of the cylinder is seen, and the track for the rotary shaft lower bearing. Towards both sides, the section of the bearing track, fixed to the divided rotary shaft. At the center, the lower bearing on the first reduction of the cylinder, cross hatched, continuing toward the upper part, sectioned to cross-hatch the drawing of the column that shows a final reduction for the upper rotary shaft bearing., towards both sides, the track of the bearing fixed with fixed with flanges to the divided rotary shaft. To the center the upper bearing and above this, the final segment of the column or static fixed shaft, with a plate with holes for the steel cable tensioners or towards the external columns that immobilize to the column or static fixed shaft in the event of deflection of great magnitude or dimension of the set or eolic generator.

In the upper section between the lower and upper bearings towards both sides with cross hatching, the divided rotary shaft, covering the tracks of the upper and lower bearings , serving as an interior support of a horizontal pinion that will transmit the rotary movement to the pinion fixed on the transmission shaft that passes to the generation room, crossing the roof of the same, turning on two bearing and bevel gears with 45° pinions to the speed change gearbox and then to the conventional generator. In the same upper section, towards both sides, the panel frames cross hatched with heavy lines. In the lower section towards both sides of the static fixed shaft the electrical generation room.

In the section below the pinions inside the divided rotary shaft and outside the static shaft for braking the whole system; towards the floor a support plate for the static fixed shaft, with anchor bolts in the floor, closing the lower set, the electrical generation room or for machines designed with concrete.

INSERT G

Fig. 12 is similar to Fig. 9 and uses the same reference numerals to designate the same or similar elements. Fig. 12 is distinguished by its divided rotary shaft. Namely, the rotary shaft consists of upper rotary shaft part 3A and a fixed shaft part 3B. The rotary shaft part is rotatable on upper and lower bearings 14 and 15 and is rotated by the wind-driven panels 2 to rotate the pinions 60 and 61 to drive the generator 17. The fixed shaft part 3B is secured by bolts 70 to the floor 71 of the generator room. The fixed shaft part 3B extends upwardly and concentrically within the rotary shaft part 3A. Brake 18 is secured between the shaft parts 3A, 3B to brake the rotary shaft part 3A.

~~FIGURE- 14 . - ADDITIONAL ELECTRICAL BOOSTER : In the upper section an~~ Fig 13A shows a wind driven generator
~~elevation of a multiple eolic generator~~, mounted on a tower 72 with the generation room 13 in the
upper part, At the right side and below the panels 2 is a horizontal truss extending beyond the
panel on the right side, At over the end of the truss, is an additional impulse drive 74 for the wind driven
~~a diagram representing~~ an electric motor 76 and a~~bove this, another diagram, representing the~~ rotary cylinder, fixed to the ~~left side, a~~
~~plate fixed~~ to the lower end of the panel 2.

Fig 13B there is seen
In the ~~lower left section, a detail in plan of a part of the panel with~~ a curved plate 77
from panel 2
supported by two horizontal springs 78 that absorb the changes in length of the panel frame and
the truss and ensure pressure contact with the rotary cylinder 76, ~~and then~~ an arrow indicating
the rotation direction ~~sense~~ of the ~~system of Eolic GEEM, touching the plate, a circle with an arrow~~
~~representing . the~~ rotary assembly ~~cylinder and arrows~~ Another arrow indicates the rotation direction of the cylinder.

~~On the lower right side, detail in elevation of a lower section of the panel, to its right~~
~~two springs supporting the impulse plate. To the right a rectangle with a shaft in dotted lines~~
~~coupled to a rectangle that represents the electrical motor that drives the rotary cylinder, the~~
~~final section shows how the set is supported on the end of the truss and at the same time is~~
the impulse drive 74 is means for the panel.
used as a horizontal maintenance ~~beam.~~

Fig 14A shows
~~FIGURE 15 . - PLAN AUTOMOTIVE GEEM: In the upper section~~ a succession of
80 wind driven 81
train coaches with two ~~eolic~~ generators on the roof of each one, which ~~added together, to~~ feed
generator to
a central ~~accumulator~~, provide electrical energy to partially or completely drive the train or
other systems that save fuel.

Fig 14B shows 82 a wind driven generator 81
~~In the lower section there is a section of~~ an automobile with ~~an eolic~~ GEEM on the
roof, which at a cruising speed of 60 to 100 km/h, from the impulsive force of the wind , generates sufficient electrical energy to partially or completely move the car.

Fig 15A shows a

~~FIGURE 16 . - GEEM OF MARINE IMPULSE: In the upper section, side view of a~~ pleasure boat, with ~~passengers and crew with~~ passenger and crew decks completely covered, ~~and~~ above the roof, ~~an Eolic Geem~~ that covers the whole length of the vessel, in such a way that advantage is taken of the maximum radius of surface area of the vessel, to install ~~a Geem~~ of great generating capacity. In the center ~~projecting like~~ a cylinder with a flag or radio communication and radar systems, and ~~which would be~~ the divided rotary shaft ~~and the~~ duct for the external part and ventilation.

Fig 15B shows

~~In the lower section : Front view of~~ the ~~same~~ vessel with catamaran type floats, on which is the crew room , ~~the~~ ~~GEEM room~~ and the tower with its flag.

Fig 16A shows

~~FIGURE 17 . - AERIAL MOTIVE POWERED GEEM: In the upper section a side view of~~ a dirigible supporting the passenger and crew cabin ~~with cables, shown with~~ oval-~~shaped windows~~, with ~~an eolic Geem~~ between these two elements, ~~on the right side~~ a table ~~with the following numeration:~~

1. - Dirigible
2. - Eolic Geem.
3. - Passenger and crew cabin

Fig 17C shows a

~~Below the drawing, the title GEEM, DIRIGIBLE and at the bottom, on the right,~~ a ~~plan view of~~ an aircraft or flying saucer, ~~showing the~~ pointed shape ~~of the craft opening~~ ~~aerodynamically and continuously to the center and on to the back to~~ two separate ~~eolic GEEMs~~ with their return halves in the center of the aircraft and the impulse halves on the outer side, the two turning in opposite directions, ~~and having the sub-title PLAN~~.

Fig 17 is

~~FIGURE 18 . - ORBITAL GEEM: In the upper right section~~ a perspective view of ~~an eolic GEEM~~ floating in space, ~~defined by a symbolic drawing of the sun to the left, with the~~ solar wind impulsing the ~~lower~~ panel, ~~turning it~~ in ~~an~~ anti-clockwise direction on its rotary shaft.

forming
~~which is~~ the cylinder ~~which forms~~ of the orbital craft, with entry for the crew on its axis, and at the lower right, a sketch of the planet earth.

Fig. 18 shows in the
~~FIGURE 19 . - PROBABLE FINISHED VIEW OF THE INVENTION: In the~~ foreground an 8 story building in the form of a tower, with the last floor having dimensions exceeding those of the other floors, and on this, is a small generation room, and a ~~Gigantic~~ gigantic wind driven generator
~~Eolic Electricity Generator~~ with four panels.

~~At~~ To the left side, a similar generator is shown on top of an apartment building, and in the background to the right, are shown two adjacent apartment buildings with similar generators giving some idea of what the future might be for ~~eolic~~ wind generation of electrical energy.

~~FIGURE 20~~ shows
~~PHOTOGRAPH. Nº 1~~. - ~~In this a view of~~ a metallic structure is seen against the background of a ~~blue~~ sky, showing an elevated structure on the right side of which is the fixed structure, formed by a triangular column, that on the left lower section, supports a beam, on which the rotary shaft of the rotary structure, is supported, and in the upper part is also supported by a similar beam, which cannot be seen because it is hidden by the vanes.

In the central section a panel with four vanes opened at 90° to its frame, indicating the wind direction, on the left side a panel with four closed vanes, aligned with the wind and its panel frame, in the background, hardly visible, a panel with closed vanes receiving the wind impulse from right to left, generating a movement from left to right. At the lower edge of the vanes the parallel alignment section or cable of the panel frame can be seen, and on the right, a panel with four vanes at 90° to the panel frame opposed to the wind direction, Finally, it is understood that the wind is passing freely at the moment the system is returning to the closed or initial zero position.

~~FIGURE 21~~ is seen

~~PHOTOGRAPH Nº 2~~ . ~~A photograph taken~~ from a greater distance that enables one to see a metallic column elevated from a structural roof to a third floor level, ~~the photo b~~eing ~~taken frontally, it is very~~ similar to ~~the previous one~~ Fig 19, and the panels are seen with the vanes on the left side aligned with the panel framework, in the center, the panel with the vanes perpendicular to the framework aligned with the wind, in the background to the right, the vanes in a very thin line, perpendicular to the framework. The panel facing the wind with closed vanes, cannot be seen because it is at the rear, hidden by the foreground.

6.- DETAILED EXPLANATION OF HOW THE INVENTION WAS BUILT

To validate the theory of this invention, an experimental eolic generator was built as follows:

1.- A fixed structure for an eolic GEEM was designed and built, with panels of 48" x 64" having an impulse area of 1,92 m² per panel. The fixed structure was designed and built in the form of a "C" with a triangular structured support column with a 12" side by 112" high, made with 1 ½" angle and ½" square rods, two horizontal beams perpendicular to the column 60" long, of "U" channels 2" x 6", with external struts and ties, placed parallel and 80" apart, to give sufficient space between the two beams for the rotary system, formed by four panels of 48" x 63" each.

At the ends of the horizontal beams, supports for the bearings of the rotary structure were installed, these being converted into the axis or center of the system. In the said supports, bearings for 2" diameter pipes were installed, the lower bearing being a taper roller type and the upper one a roller bearing.

2- The rotary shaft was constructed using light black steel pipe 2" diameter, with the ends turned down to seat the bearings, and on the extended end of the pipe the gear pinion to transmit the rotary motion to the conventional generator was installed.

3.- The four panel frames, welded to the rotary shaft, consisted of eight rectangular tubes 2" x 1" welded at 90" to the rotary shaft, and 64" apart, diagonal tensioning ties of ¼" diameter steel rod were welded from the top of the rotary shaft to the outside top edge of the panel frames and from the bottom of the rotary shaft to the bottom outside edge of the panel frames, to prevent vertical flexing.

4.- Vanes of 12" x 63", were manufactured with longitudinal bends of ¾" side at 90°, on the oscillation shaft side, and of 1", on the opposite side in the opposie direction to give the

vane a Z shaped section, for the purpose of completely closing the overlap of the vanes to the passage of air. The upper and lower edges of the panel were reinforced by pieces bent in the form of a triangle. The material used for the vanes was fiber-glass, because of its light weight and high resistance to flexing and its plasticity and resistance to the outdoor elements, rain and oxidation.

5- Experimentally, an optimum point for the oscillation shaft on the vane was sought, testing several points as oscillation shafts, obtaining a high performance with it at the edge of the vane, where the mathematical axis of the spindles is equal to the vertex of the vanes, in such a way that the vane presents its whole surface to receive the impulsive force of wind or water and the resistance will be zero. In these conditions with the axis of the spindle at the edge of the vanes the full power yielded by them is obtained, as in a plate bending machine where the edge of maximum power is equal at the axis of its hinges.

However, taking into account that air and water are gaseous and liquid elements and for constructive design reasons, the spindles have to remain trapped or wrapped by the plates of fiber glass or steel and be fixed by removable covers, bolted on one side of the longitudinal resistance section and on the other by the flat section of the vanes; the axis of the spindles and bearings of the vanes, will be determined by the volume or radius of the vane spindle, plus the thickness of the plate of which it is made, being displaced slightly from the edge of the vane with relation to the indicated elements.

For the experimental vane, a fiber-glass model was die-cast, making 16 vanes for four panels with four vanes each, and also the semi-cylindrical clamps for fixing the bearing housing pipes.

6.–The oscillating shaft bearings were installed in the vanes with the bearing housing pipes and the semi-cylindrical clamps, sealing the opposite ends of the bearing with resin and fiber glass to prevent filtration of water into the bearings.

7.- Were installed the palettes, on spindles or oscillation shafts, previously welded to the lower panel frame and fixed to the upper spindle with molded fixing plates for ¼" diameter spindles, adding fiber glass seals for protection against rain.

8.- Were installed by welding and screws, the ceilings of alighnemet or of departure and them of final oscillation to 90° in each mark of the panels, consistent in spindles outstanding of the marks, that limit by shock the oscillatory movement of the palettes, protected with a softening material as the rubber, for reduce the noise by shock, with the panels as well as give durability to the palettes.

9.- Observing certain disagreement in the oscillatory reaction of the palettes, were installed rods things or aligning light round profiles or regulatory between palettes, below the sames, opting for a revolving spring in the form of a screwed shaft of ¼" in such a way that the regulator profile to be inserted to the support by a kind of socket-pan installed in the profile to the same distance of the shafts of the palettes, maintain them in a uniform or constant variable position, to condition of that the distance between the shafts of the spindles of oscillation will be exactly equal to the shafts of the aligner profile.

It was proven with great satisfaction that the invention was an extraordinary succes because in spite of be found in a workshop without roof of 17' x 20 foot. with an air that was bouncing in the walls and would come from different addresses, the panels were turning and the palettes was comported exactly as were anticipated. The rotary movement had a permanent sense of right to left or in opposite sense to the clock.

10 -It was transfered the "GEEM", to a roof of 18 foots of high and were installed on some structures of iron, letting as generation room the interior below of the roof, toward where leaves the scion of the rotary shaft. With free wind the "GEEM" tour with great energy and force. It has not been arrived to the experimental stage of electrical generation by lack of economic resources and it is not indispensable requirement to make it, because is obvious that

having rotary movement, turned out to be it totally positive, and electrical energy to obtain will depend of the size and location of the definitive experimental model. It is let constancy that the photograph that is attached to the present patent request has the object of demonstrate that the rotary movement by panels auto rregulables and oscillatory palettes is a concrete reality and totally demonstrated.

11.- By economic reasons has not been built neither installed the rotary cylinder of additional impulse, nor the system of conventional electrical generation that in the course of the evaluation will be installed.

6.- POSSIBILITIES OF APLICACION OF THE INVENTION.

The possibilities of application of the invention are very vast because the modern man can not be developed without electrical energy. With the electronics the man uses it for all the end of his collective and personal relation. Without communication, without light, without to the machine that supply their energies, the man would return to the era of the caverns.

Electrical energy is the invention more universal of all, to increase its production, to make them it clean and ecologic for preserve the life in the planet is a challenge that all the men wish to surpass, and the "GEEM" is a valuable contribution to all the humanity.

The eolics generators will permit the man to colonize positively impossible spaces by now. Will permit to create accessions in sterile deserts and to obtain water from the subsoil and to blossom the incandescent sands, to colonize frozen continents in the Arctic and the Antartic, or in any place of the planet, removed from the electrical nets or tracks and highways, to move its electro domestics apparatus and be felt as in the better of the cities.

Will permit to create geological or explorer camps that require of communication and electronic resources for his survival.

The Eolic GEEM in the sea will serve to move vessels without contamination of the waters, in the fishing vessels and of other type, that will serve to save the life of his srew, if not as source of impulsion , as supplementary energy to survive and be communicate.

To board of transport units, as trains, trucks or electrical cars, that took advantage the force of shock of the wind in vehicles that are displaced an average or high speed, with an impact force of the vehicle against the wind to equal speed of displacement of the same, less the speed of the wind if is displaced in the same address of the vehicle or but the force or speed of the wind if the vehicle it is displace against the wind.

In the cities, to supply to the electrik generators of energy from base not renewable, to eliminate the pollution, for housing and industrial consumption.

"GEEM" river model to generate electrical energy in rivers with or without pending, in jungles without wind or small inhabitants and hamlets.

MARINE GEEM, to generate industrial electrical energy to transform the salty water into freshwater. To create autonomous floating cities of electrical energy, combined with Eolic GEEM.

As drive pumps for irrigation, to extract water of the subsoil and to increase it by levels or flight of teps to irrigate nearby mountain skirts to flat rivers avoiding longest channels.

As direct mechanical units, for pumps, windmills, machines and tools that work for twist in the field or far of the electrified cities.

As electric substitute in the city housings where each household has to its scope a little of wind and be alleviated of the costly electrical supply.

As generaters of electrical energy in flying machines type dirigibles, installed under the light gas globes and on the crew room and passing.

As motor and electrical generator of a ship of type flying disk, with two geem, installed in parallel form with rotary movement toward the foreign and toward the subsequent part or stern of the ship.

In the space extraterrestial in orbital ships, with revolving panels by effect of its palettes with a similar electrical load to that of solar wind in such a way that by electrical repulsion, is generated an rotary movement alone of the panels or of all the ship, for example in an way cylindrical ship, where the panels installed in the foreign section, it make to turn exposing to the orbital ship to a rotation with exposition periodical of the solar radiation , probably very useful for the crew by the caloric effect in cultivation or scientific experiments aboard .

Finally as probable source of renovation of the ozone in the antartic, and all what experimentally to be perfectionig the man, and when the man of the future colonize planets without rivers but with abundant wind, where to generate electrical energy without contaminating the that new vital space or final refuge of the humanity.